

FINDING OF NO SIGNIFICANT IMPACT(FONSI)
for the
Horton Rim/Dairy and Windy Ridge Rangeland Health Treatments and Urban Interface
Protection
Klamath Falls Resource Area - Lakeview District
Environmental Assessment #OR-014-01-02

The Bureau of Land Management, Lakeview District, Klamath Falls Resource Area, has analyzed the Horton Rim/Dairy and Windy Ridge Rangeland Health Treatments and Urban Interface Protection Environmental Assessment containing the following proposal and their alternatives related to:

- Juniper Removal/Habitat Restoration
- Wildland Urban Interface Protection
- Use of Prescribed Fire

Based on the information within the Environmental Assessment, it is my determination that none of the alternatives analyzed constitutes a significant impact affecting the quality of the human environment greater than those addressed in the:

- Final-Klamath Falls Resource Area Management Plan and EIS(FEIS)(Sept. 1994), and its Record of Decision and Resource Management Plan and Rangeland Program Summary (June 2, 1995)(KFRA ROD/RMP/RPS).
- Klamath Falls Resource Area Fire Management EA#OR-014-94-09(June 10,1994).
- Klamath Falls Integrated Weed Control Plan EA (July 21, 1993).
- Standards for Rangeland Health and Guidelines For Livestock Management For Public Lands Administered By The Bureau of Land Management In the State of Oregon and Washington(August 12,1997).
- Final Environmental Impact Statement, Vegetation Treatment On BLM Lands in Thirteen Western States.
- Interior Columbia Basin Ecosystem Management Project/Eastside Draft Environmental Impact Statement/May 1997(ICBEMP). We have reviewed the direction of the preferred alternative in ICBEMP and feel that the proposed action meets the intent/general direction of that alternative.

Impacts to the environment would be similar to or less than those disclosed in the above mentioned documents. Therefore, it is my decision that an Environmental Impact Statement is not necessary and will not be prepared.

Signed: Teri Raml
Teri Raml, Field Manager
Klamath Falls Resource Area

Date: 1/30/02

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAKEVIEW DISTRICT
EA COVERSHEET

RESOURCE AREA: Klamath Falls

FY& EA #: OR-014-01-02

ACTION/TITLE: Horton Rim/Dairy and Windy Ridge Rangeland Health Treatments, Habitat Restoration, and Urban Interface Protection

LOCATION: Klamath Falls Resource Area

FOR FURTHER INFORMATION CONTACT:

Steve Hayner
Klamath Falls Resource Area, BLM
2795 Anderson Avenue, Bldg. 25
Klamath Falls, OR 97603
541-883-6916

FREEDOM OF INFORMATION ACT AND RESPONDENT'S PERSONAL PRIVACY INTERESTS: The Bureau of Land Management is soliciting comments on this Environmental Assessment. Comments, including names and street addresses of respondents, will be available for public review at the above address during regular business hours. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Environmental Assessment No. OR-014-01-02

for

**Horton Rim/Dairy and Windy Ridge Rangeland
Health Treatments, Habitat Restoration, and
Urban Interface Protection**

Klamath Falls Resource Area - Lakeview District
Klamath Falls, Oregon

Table Of Contents

Introduction.....	1
Proposed Activity.....	1
Proposed Locations.....	1
Need For Proposed Action.....	1
Objectives.....	2
Conformance with Land Use Plans.....	2
Alternatives	
Alternative 1.....	2
Alternative 2.....	3
Alternative 3.....	3
Affected Environment	
Range.....	4
Special Status Plants and Noxious Weeds.....	4
Water Resources/Hydrology.....	4
Wildlife.....	5
Cultural Resources.....	5
Soils.....	6
Environmental Consequences	
Range.....	7
Special Status Plants.....	7
Noxious Weeds.....	7
Water Resources/Hydrology.....	8
Wildlife.....	9
Cultural Resources.....	10
Soils.....	10
Project Design Features and Mitigating Measures.....	11
Other Consequences.....	12
Consultations.....	12
Literature Cited and Recommended Reading.....	12
Maps	
Map 1. Proposed Project Area.....	14
Map 2. Alternative 1. Proposed Priority Treatment Areas.....	15
Map 3. Alternative 2. Proposed Priority Treatment Areas.....	16

Introduction

Western juniper (*Juniperus occidentalis*) has been actively invading the shrub steppe community for the past 120 years. Active fire suppression, overstocking of livestock in the late 1800's, along with a wetter than normal period in the latter half of the 19th century, has allowed juniper to encroach into areas where it was formally excluded. Invasive western juniper communities are continuing to reduce and replace the shrub steppe communities and thus reduce habitat and suitable forage for wildlife and other rangeland species. This project is designed as both a habitat restoration and fuels reduction project that will help restore vegetative composition and structure to the shrub steppe community by the cutting and removing of western juniper.

Proposed Activity

The proposed activity would involve the removal of invasive juniper, reintroduction of fire to the project area, and creating fuel breaks designed to aid in fire suppression of the Wildland Urban Interface on up to 3,000 acres on public lands. Adjacent private and state lands may be included if cooperative agreements are reached. Western juniper will be cut by both hand-felling and mechanical methods. The juniper will be removed from the site, loped and scattered, or piled and burned at a later date. The cut juniper may be utilized if access through adjacent private lands and cooperative agreements are reached. Mowing, slashbusting, or crushing of decadent shrubs and mountain mahogany may also be performed.

The reintroduction of fire, by way of prescribed burns, will be used to reduce excessive fuel loads, but also used to return fire back into an ecosystem that was developed with fire as an integral part. The main purpose for the reintroduction of fire is to restore the vegetative composition and structure to the shrub steppe community. Seeding and planting of native vegetation may be used to assist in the re-establishment of the vegetative community.

This project is also designed to create fuels/fire breaks within the Wildland Urban Interface. These fuel breaks are mowed areas in the vegetation designed to slow fire movement and allow suppression activities to take place in the event of a wildland fire. Road construction may be necessary to reach selected treatment areas. Roads would be designed to minimize impacts. If appropriate, the roads would be constructed of juniper chips to minimize soil impacts and reduce the longevity of the newly constructed roads. Juniper trees from within the project area would be chipped and used as the roads base.

Proposed Locations

- ☐ T. 39S R. 11 E Section 19, T. 39S R. 11 ½ E Sections 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 22, 23, 24, and 25 (See Map 1).
- ☐ Adjacent private and state lands may be included if cooperative agreements are reached.

Need for the Proposed Action

Western Juniper has been actively invading the shrub steppe communities in the Pacific Northwest for the past 120 years (Miller, Svejcar, and Rose 1999). More than 90% of the eight million acres of western juniper woodlands have developed over the past 100 years. The majority of these stands are still in transition from a shrub steppe to juniper woodland (Miller, Svejcar, and Rose 1999). Prior to Euro-American settlement, western juniper was confined to areas with shallow rocky soils underlain with fractured bedrock (Burkhardt and Tisdale 1969, Miller and Wingard 1994, Miller and Rose 1995). Western juniper has since expanded into meadows, riparian areas, productive rangelands, and big sage habitat. This expansion of juniper is attributed to current and past wildland fire suppression, introduction and overstocking of livestock in the late 1800's, and a mild and wetter than normal period around the turn of the 20th century. The most rapid period of expansion in mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) habitat occurred between 1885 and 1925 (Miller, Svejcar, and Rose 1999). It is estimated that western juniper woodlands currently are increasing faster than they are being converted from woodlands.

As shrub steppe communities are converted to juniper woodlands, community structure, composition, function, processes, and wildlife habitat suitability are altered. In one study, when juniper dominance increased to about 50% of maximum closure, mountain big sage brush declined by nearly 80% of its maximum potential (Miller, Svejcar, and Rose 1999). They also documented that herbaceous vegetation also decreased in both species diversity and biomass and bare ground increased in mountain big sage brush communities as they were converted to woodlands. Bitterbrush (*Purshia tridentata*) is also negatively affected as shrub steppe communities progress towards juniper

woodlands. Adams (1975) concluded that the existing plants of bitterbrush lived out their normal life spans but recruitment was drastically limited. Miller, Svejcar, and Rose (1999) also showed a reduction of leader growth on bitterbrush of up to 50% in late seral to closed canopy juniper woodlands versus open stands.

In areas where juniper has not encroached and the shrub steppe communities have been virtually untouched by fire, the mountain big sage and mountain mahogany stands are often decadent and overgrown, with little recruitment of new seedlings and grasses. These areas provide little foraging opportunities for wildlife and other rangeland species. The absence of fire in these areas has also produced fuel loads that increase the potential for a wildland fire to occur. Not only are wildfires potentially more intense than before due to fuel loading, but also with the ever-growing wildland urban interface, the risk of a wildland fire affecting human inhabitants is increasingly more likely. Recent fires across the nation have brought this reality to the forefront.

Objectives

There are three main objectives for this proposed project:

- ☐ **Fuels Reduction\Wildland Urban Interface Protection** - As the urban interface continues to expand, the risk to loss of private property from wildland fires continues to increase. The proposed project is designed to reduce these risks to the adjacent landowners and their properties by reducing fuel loads and creating fuel breaks.
- ☐ **Habitat Restoration** - The proposed area is composed of six grazing allotments and is also designated as critical winter range for mule deer. The removal of invasive juniper will assist in the reestablishment of the shrub steppe community and create a more natural fire regime. Mowing, slashbusting, and crushing of decadent shrub and mountain mahogany stands will also assist in the rejuvenation of the shrub steppe community. This part of the project may include the planting of native species to assist in the reestablishment of both grasses and shrubs.
- ☐ **Reintroduction of Fire into the Ecosystem** - The reintroduction of fire, by way of prescribed burns, is necessary to not only reduce excessive fuel loads, but also to bring fire back into an ecosystem that developed with fire as an integral part. The main purpose for the reintroduction of fire is to restore the vegetative composition and structure to the shrub steppe community. This may consist of repeated entries (successive prescribed burns) to reduce the fuel loads to an adequate level.

Conformance with Land Use Plans

Final - Klamath Falls Resource Area Management Plan and EIS (FEIS) (Sept. 1994)

Klamath Falls Resource Area Management Plan/Record of Decision (RMP) (June 1995)

Klamath Falls Resource Area Fire Management EA#OR-014-94-9 (June 10, 1994)

Alternatives

Alternative 1 (Proposed Action):

The proposed project area comprises 4,321 acres of which 3000 acres of public land may be treated with a combination of treatments. Adjacent private and state lands may be included if cooperative agreements are reached. Treatments would be concentrated within, but not limited to, the higher priority treatment areas (see map 2.) within the proposed project area.

Fuels Reduction\Wildland Urban Interface Protection\ Habitat Restoration

This alternative proposes treatments that include the mechanical cutting and hand-felling of juniper. Juniper trees would be cut by mechanical methods, such as using a shearer in accessible areas, and by hand-felling measures in areas where access for mechanical equipment and operation is not feasible. The cut juniper would be piled and/or burned at a later date or skidded to a landing to be removed from the project area. Burning of the cut/piled juniper would be done at appropriate times considering the weather, fuel loading, and other site-specific factors.

Currently public access to the area is limited, but if proper access is gained through cooperative agreements with private landowners, the juniper may be available to be utilized by the public. The juniper would be cut, skidded on designated trails to designated landings, and then removed from the site. Uses of juniper may include, but are not limited to, firewood, milling, chipping, whole tree utilization (biomass), and posts.

Prescribed fire may also be used to reduce the fuel loads, as well as the encroaching juniper within the proposed area. These fires would be Management Ignition (MI) prescribed fires. These are intentionally ignited fires set to accomplish management objectives in a specific area under prescribed conditions identified in approved fire plans (time, season, smoke management, weather conditions, location, and firing techniques selected by the BLM). All prescribed burns are planned and authorized events. Other methods such as mowing, slashbusting, and crushing of decadent brush and mountain mahogany may also be used to reduce fuels and rejuvenate the shrub community.

In designated areas within the proposed project boundaries mowing or slashbusting of juniper and shrubs would be used to reduce fuel loads and create firebreaks to assist in fire suppression activities in the event that a wildland fire would occur. Activities may also occur on private lands if cooperative agreements are achieved. The firebreaks would assist in the slowing of the wildland fire movement, allow fire suppression activities to take place, reduce the risk of personal property loss, and reduce the cost of fire fighting efforts.

The fuel breaks would be strips mowed on the contour (side hill) of the hill. The number of mowed strips and their width would vary depending on fuel loading in the area. Fuels specialists would designate the number and widths of strips necessary to adequately reduce the hazards from a wildland fire.

After treatments, some areas may be planted with native shrubs and broadcast seeded with native species to help reestablish the native plant communities. Areas that may be planted include areas that are currently void of vegetation, areas susceptible to erosion, areas susceptible to invasion by cheat grass or noxious weeds, and those areas that previously had native shrubs which have been excluded by juniper encroachment. Most areas would not be planted, but left to allow natural succession and the reestablishment of vegetation to occur.

Some temporary road construction may be necessary to reach selected treatment areas. If applicable, juniper trees, from within the project area, would be chipped and used as the road's base. The juniper chip roads would be approximately 14 ft. wide and approximately 6-24" in depth (depth may exceed 24", depending on local landscape features).

Alternative 2: (Wildland Urban Interface (WUI) Protection)

Under this alternative, up to 1000 acres may be treated within the proposed project area. The treatment under this alternative would be similar to that in Alternative 1, except prescribed fire would not be utilized and the area treated would specifically target the Wildland Urban Interface. The Wildland Urban Interface is defined as a small community of residential dwellings or a series of single residential dwellings along a road, adjacent to or mixed within undeveloped wildlands. Treatments would be concentrated within the Wildland Urban Interface (see map 1.). The objectives of these treatments would be to reduce fuel loads and create firebreaks to assist in fire suppression activities in the event that a wildland fire would occur.

Alternative 3: (No Action)

Under the No Action alternative, no new treatments would be implemented. Current management of the proposed project area would remain the same

Affected Environment:

Range

There are six grazing allotments within the proposed project area. All are extensively intermingled with, and run in common with, various parcels of adjacent private lands owned by the various grazing lessees. The basic information about each allotment is as follows:

0807 Barnwell - The grazing lease is owned by 5H Ranch (Ray Hamel) and has a 76 AUM lease for 50 head of cattle - 5/1 to 6/15. Though a fairly large allotment (1,708 acres), much of it is very steep and little used by livestock; the primary use is made in and around Horton Reservoir, which is located in the center of the allotment.

This allotment is a mix of different types and conditions of juniper/shrub/grassland communities due to its variable aspects and topography.

0829 Horton - The grazing lease for this small allotment (760 acres) is owned by the DeJong's Dairy. The grazing lease allows for 11 head of cattle from 4/21 through 6/30 - 26 AUMs. It is comprised primarily of south facing slopes above the private lands that are extensively dominated by juniper.

0835 Ketcham - The grazing lease for this small allotment (320 acres) is in the process of being transferred to a new lessee. It has not been grazed in many years, though the lease parameters allow for 13 cattle from 5/1 to 6/15 (20 AUMs). Much of the area has south aspect slopes are dominated by juniper and have cheatgrass problems in the understory.

0838 Windy Ridge - This grazing lease is held by the Lost River Ranch and allows for 52 head for the month of May (52 AUMs). This allotment lies north of the Lost River Ranch private lands and is used in common with their land. It is 600 acres in size. The allotment is dominated by juniper with little of the major shrub species, i.e. bitterbrush and big sagebrush.

0841 Marshall - This small allotment (348 acres) has been in non-use for many years, though still in the Marshall name. The lease parameters, if grazed again, are for 10 head from 4/21 through 5/31 (14 AUMs). This hillslope allotment has a southwestern aspect and is also dominated by juniper to the ever-increasing exclusion of the shrub and herbaceous understory.

0850 Wilkinson - This allotment (320 acres) also has limited spring permitted use, i.e. 15 head for the period 5/1 to 6/5 (18 AUMs). The lease is held by Wilkinson and is grazed in common with private lands, all of which are dominated by juniper. The south slopes of this allotment are dominated by juniper and may have an annual plant composition (cheatgrass) concerns.

Special Status Plants

Botanical surveys within project areas will be completed prior to ground disturbance activities. The special status species most likely found include Columbia cress (*Rorippa columbiae*), long-bearded mariposa lily (*Calochortus longebarbatus* var. *longebarbatus*), and fringed campion (*Silene nuda* ssp. *insectivora*).

Noxious Weeds

Numerous species of noxious weeds occur in the resource area and have the potential to be present in the project area. A survey of adjacent BLM lands found no special status plant populations and only one noxious weed population, Dalmation toadflax (*Linaria dalmatica*), near Harpold Dam. A list of the noxious weeds and special status plant species documented, or with potential to occur on the resource area is maintained by the resource area botanist.

Water Resources/Hydrology

There are approximately 4.1 miles of stream channels in the assessment area. Most of these streams are tributary to reservoirs or irrigation works in Poe Valley, Yonna Valley, and Pine Flat, and do not appear to connect with larger natural watercourses. One ephemeral stream drains into the Lost River. Due to small drainage areas and low precipitation, streams in the area flow ephemeral or intermittently and do not support extensive riparian plant communities. There is no available water quality or Proper Functioning Condition data for any of these streams. One spring, located in the SE corner of section 15, T. 39S R. 11E, is within the assessment area.

Upland runoff in the area is naturally "flashy," partly as a result of low-permeability soils and steep slopes. It is likely that rapid runoff has been accentuated by roads, soil compaction, and decreased soil organic matter content associated with juniper encroachment. In concert with grazing, the competitive superiority of closed canopy juniper stands may result in a decline in understory vigor (Miller et al., 1999). If vegetation cover and organic litter production are reduced, precipitation reaching the ground surface may be less likely to infiltrate and more likely to generate runoff. This, in turn, may cause soil erosion and decreased soil water storage. Together, increased runoff and decreased soil water storage capacity can lead to decreased groundwater recharge and decreased flow from springs (Eddleman and Miller, 1991).

The road that traverses T.39S R.11½E, section 24 from the SE to the NW in its current condition is contributing runoff and sediment to the adjacent ephemeral stream channel. Some of this sediment may reach the Lost River.

Wildlife

No species classified as Threatened or Endangered under the Endangered Species Act are known to exist within the proposed project area or on adjacent lands.

The proposed project area is within critical wintering range for mule deer, which translates to their reliance on this area for habitat between November 15 and April 1. The proposed project area (4,321 acres) lies within The Klamath Management Unit that encompasses 792,320 acres. The mule deer populations in the Klamath Management Unit are estimated at 3,500 animals, which is about 55% of the management objective set by Oregon Department of Fish and Wildlife (ODFW). According to ODFW (personal comm. Tom Collom), the wintering population on Horton Rim and Windy Ridge is approximately 600 - 700 animals. These numbers fluctuate each year depending on weather, available forage, and other limiting factors.

The red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), American kestrel (*Falco sparverius*), and the Swainson's hawk (*Buteo swainsoni*) are known to nest in the area. Songbirds also use the project area as nesting habitat. Bird census stations were surveyed in 2000 and 2001 on Harpold Ridge, the ridge just adjacent to the proposed project area. The detections at these stations should be representative of the species that occur within the proposed project area. The most common species detected were the chipping sparrow, spotted towhee, mourning dove, bushtit and scrub jay. Other species detected include, the American robin, ash-throated flycatcher, Bewick's wren, black-billed magpie, Brewer's blackbird, brown-headed cowbird, California quail, Cassin's finch, common nighthawk, gray flycatcher, juniper titmouse, northern flicker, pine siskin, ring-billed gull, and Townsend's solitaire.

The ash throated flycatcher, chipping sparrow, juniper titmouse, mountain chickadee, and Townsend's solitaire are all generally associated with the juniper woodland versus the shrub habitat. None of the sage/grassland species that would be expected (Brewer's sparrow, vesper sparrow, sage thrasher) were present. Other shrubland species of concern (the green-tailed towhee and lark sparrow) were also not detected.

To date no surveys for bats have been conducted in the proposed project area. The long-eared myotis (*Myotis evotis*), pallid bat (*Antrozous pallidus*), and silver-haired bat (*Lasiurus noctivagus*), all considered species of concern by the BLM, may occupy the area. Other bat species that may also be present include, the big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), and the California myotis (*Myotis californicus*).

Cultural Resources

The project area falls within the ethnographic territory of the Modoc Indians. The Modoc territory was divided into three geographic areas. Modoc utilizing resources along the Lost River (which is adjacent to the project area) from Olene Gap at Olene, Oregon through Langell Valley were known as the *Kokiwas*, "people of the far out country" (Ray 1963:202).

Today the physical remains of the Modoc culture are scattered throughout the landscape in various forms, from lithic scatters, where stone tools were manufactured, to stacked rock features, a component of the Modoc religion (Goodwin 1997). The Modoc practiced a subsistence pattern that revolved around hunting game, gathering roots, such as epos, or Ipos (*Perideridia* sp.) and camas (*Camassia quamash*), and fishing the Lost River. Two ethnographically known Modoc fishing village sites, *Niya'ntkis* and *Tsotso'ksi* were located along Lost River near the project area (Ray 1963:211).

Historically, fur trappers from the Hudson's Bay Company were the first Euro Americans to arrive in the Klamath Basin in the mid 1820s. In 1864, a treaty was signed between the United States and the Modoc, Klamath, and Yahooskin Band of Snake Indians, which ceded their territories to the United States. Euro Americans began homesteading the region in the 1860s - 1870s. Poe Valley, an area adjacent to the project area to the south, was named for James M. Poe, who homesteaded the area in the 1870s (Jones 2000:7).

Early settlement focused on cattle ranching, farming, and logging (Follansbee and Pollock 1978). Of these three activities, evidence of ranching may be found in the project area today in the form of fences and can dumps.

Soils

The dominant soil in the project area is Lorella very stony loam, 2 to 35% south slopes, which makes up approximately 70% of the area. The surface is shallow, from slightly stony to extremely stony and cobbly. Permeability of this soil is slow. In areas without soil stabilizing vegetation, spring runoff is rapid, producing high erosion hazards. The soil has moderate frost heaving potential. The subsoil has moderate to high shrink-swell potential due to higher clay content. Western juniper invasion has led to the deterioration of the native plant communities leading to a higher percentage of bare ground underneath, thus increasing the soil erosion hazard (USDA SCS, 1985).

The next largest soil area is Lorella-Calimus association; steep north slopes, making up over 20% of the project area. This association is made up of 60% Lorella very stony loam and 25% Calimus loam. The Lorella very stony loam is found on upper slopes with the Calimus loam soil occupying the lower slope positions. The Lorella portion of the association has attributes similar to those described above. The Calimus loam is a deeper, less stony soil than the Lorella. The permeability is moderate as is spring runoff potential. The erosion hazard is also moderate. In areas western juniper invades, the deterioration of the site may reduce native grass/shrub communities. Site deterioration may also increase the amount of bare ground, raising the soil erosion hazard potential. The Calimus loam soils have a moderate potential for frost action, and a moderate to high shrink-swell potential (USDA SCS, 1985).

The Dehlinger very stony loam, 15 to 65% north slopes makes up less than 10% of the project area. This soil is well drained, very stony, and generally found on steep north slopes. The permeability is moderate as is spring runoff potential. Erosion hazard is also moderate. This soil can support a climax native shrub/grass community. Deteriorated sites may lose perennial grasses and forbs leaving low value shrubs with large amounts of bare ground. The Dehlinger very stony loam has a moderate potential for frost action and a low shrink swell potential (USDA SCS, 1985).

TABLE: 1. Soil Series By Area

Soil Series	Setting	Acres	Percent of project area
Lorella very stony loam	2 to 35% south slopes	2962	70%
Lorella-Calimus association	Steep north slopes	913	22%
Dehlinger very stony loam	15 to 65% north slopes	343	8%
Calimus loam	0 to 2 % slopes	1	<1%
Calimus loam	2 to 5 % slopes	2	<1%
Fordney loamy fine sand	2 to 20% slopes	1	<1%
Laki loam		1	<1%
Stukel-Capona loams	2 to 15% slopes	1	<1%

Environmental Consequences

Range

Under the proposed alternative, the south and southwestern slope areas that currently have significant (>10% composition) understories of exotic annual grasses, may experience dramatic increases in the density and spatial extent of those undesirable annuals (i.e. cheat grass and Medusa-head) if large portions of these slopes are burned during prescribed fire activities. Disturbance from the other forms of juniper removal (e.g. mechanical shearing, hand cutting/piling) should also be limited in areas with significant current understories of exotic annual grasses - especially if these species comprise over 20% of the plant community. Post-treatment seeding of perennial grasses may mitigate the effects of the juniper removal process.

Plant communities dominated by healthy shrub and native perennial grass communities would likely be minimally affected by burning as long as the current percentage composition of exotic annual grasses is <10%. These areas

may have a low to moderate increase in native annuals, but normal plant succession would eventually lead to a diminishment of these annuals and an increase in perennial natives. Alternative (i.e. non-burning) disposal techniques (lop and scatter, chip, etc.) should be emphasized on the drier, southerly slope areas. The north facing areas that are more likely to be dominated by native perennial grasses, could be burned as needed - with fall burning preferred.

If a significant percentage (>35%) of the allotment is treated (especially if burned) and grazing were allowed at full licensed use in the growth year immediately after the treatment, the re-establishment of the native plant communities could be inhibited and the invasion of significant amounts of undesirable annual grasses could occur. Proposed Project Design Features (PDF's) requesting the rangeland permittees to rest their allotments would mitigate these impacts. If grazing takes place during the two growing years after treatment, it should be at no more than light overall use levels (i.e. <35% utilization) in the treated areas.

There would be a short-term loss of grazing receipts to the government if the allotments were rested (not grazed) for 1-2 growing seasons after treatment. There would also be the potential loss of forage on grazing allotments. However, the expected post-treatment increases in higher quality and quantity of forage should more than offset the short-term loss and inconvenience to the grazing leaseholders.

Special Status Plants

BLM administered lands will be surveyed for special status plants. Sites located will be identified and appropriate protection measures will be implemented, therefore, negative impacts to these species are not expected. Protection measure can include flag and avoid, flagging of buffers around sites, or unit boundary adjustments. The use of a mechanical shearer or other mechanical equipment in Alternatives 1 and 2 would have the potential for impacts to populations undetected by pre-project surveys. Prescribed fire applied under Alternative 1 could impact special status plant species if the fire is applied outside the season to which these plants are adapted to the occurrence of fire. However, the reduction of hazardous fuel levels and the reintroduction of fire as an ecosystem process could positively affect special status plant species that are adapted to a natural fire frequency and intensity. Negative effects, the potential loss of individual plants and/or populations, may occur to even fire-adapted species in areas that have excessive fuel loading. These fires may burn hotter and longer than in past fire events under which these species evolved.

Alternative 3 would have little potential to directly affect populations of these species. However, if fire continues to be excluded as an ecosystem process, habitat changes in the may impact special status plant species in the long-term. In particular, the maintenance and accumulations of heavy fuel loads could result in a wildfire, which would be a high intensity fire, to which many of the native species are not adapted. Special status plant populations may be affected by the physical disturbance associated with fire suppression activities, and through alteration of the nutrient cycling regime of a site from the application of chemical flame-retardants.

Noxious Weed Risk Assessment

Alternatives that result in the most ground disturbance could create conditions that favor the invasion of noxious weeds. The use of the mechanical shearer in Alternative 1 and 2 may create the disturbed conditions under which many noxious weeds have a competitive advantage. These effects of treatments using mechanical methods would be over a larger area in Alternative 2 than in Alternative 1. The vehicles and machinery entering the project area to implement these treatments would increase the potential for the introduction of noxious weeds into the area from sources outside the project area. Proposed PDF's requiring machinery to be rinsed off prior to moving on site or from areas that contain noxious weeds would reduce the potential spread of noxious weeds.

The use of prescribed fire in Alternative 1 may increase noxious weed populations where they already exist. There would also be the potential for introduction of noxious weeds into the area from sources outside the project area on the vehicles and machinery used to implement prescribed fire projects.

Alternative 3 (no action) would not create the physically disturbed conditions under which many noxious weeds have a competitive advantage. However, due to the potential for wildfire from the persistence of high fuel loads, weed populations may have a competitive advantage under conditions resulting from the soil disturbance associated with fire suppression activities, and from alteration of the nutrient cycling regime of a site as a result of the

application of chemical flame-retardants. The vehicles and machinery entering the project area to suppress any wildfires would increase the potential for the introduction of noxious weeds from sources outside the project area.

Water Resources/Hydrology

Alternative 1:

Following juniper removal, the recovery of herbaceous plant communities can lead to an increased supply of organic litter, decreased exposure of bare soil, increased infiltration capacity, and decreased runoff and erosion potential (Bates et al. 1999; Hofmann and Ries, 1991; Buckhouse and Gaither, 1982). The recovery of soil surface cover and infiltration rates following treatment is affected by site-specific factors such as land management, soil texture, slope, aspect, and soil condition. Juniper removal within or adjacent to watercourses may lead to the enhancement or reestablishment of riparian vegetative communities.

Removal of juniper appears to have a marginal effect on water yield (Collings and Myrick, 1966; Schmidt, 1987). The vegetation that remains or re-colonizes following treatment may increase in size, density, or cover after juniper is removed, and can use up any “savings” realized (Pyke, 1994). Conversely, recent research (McCarthy and Dobrowolski, 1999) and anecdotal information suggests that flow from springs can increase after removal of juniper around the spring source.

The mechanical methods used to manage juniper can have detrimental effects on watershed processes. Treatment effects are highly variable, and depend not only on the type and extent of treatment applied, but also on the past, present, and future management of the site. Detrimental impacts to soil may cause decreased infiltration and increased runoff. Proposed PDF's addressing the use of a mechanical harvester and soil moisture conditions would assist in mitigating these impacts.

Direct and indirect impacts to water quality would likely be minor. Some sediment could directly enter streams from roads or skid trails that cross or are in close proximity to streams. Additionally, use of mechanical shears along stream banks may accelerate bank failure and consequently increase sediment loads. Indirect sedimentation to streams could result from soil disturbance, hydrologic routing along skid trails, or road maintenance activities. Since most of the streams drain into irrigation ditches or reservoirs, it is unlikely that the proposed action will affect water quality in natural watercourses outside of the planning area.

The ephemeral stream that drains T.39S, R.11½ E, section 24 is tributary to the Lost River. The recommended road improvement adjacent to that watercourse should lead to long-term decreases in fine sediment supply.

Mowing of shrubs and grasses could cause increases in soil erosion and runoff, especially in areas with steep slopes and soils with high erosion potential. The relatively small width of these areas will ensure that the slope length of disturbed areas is short, thus reducing erosion potential. Prescribed burning may cause some small increases in sediment and nutrient delivery to stream channels. In ponderosa pine forests, such increases are usually short-lived, with water quality soon returning to pre-fire levels (Gottfried and DeBano, 1990). It is probable that a similar dynamic occurs in juniper-shrub communities. Were they to occur, large wildfires would likely have a greater and longer lasting impact on hydrologic processes than would the proposed action (DeBano et al., 1996).

The juniper material used to develop proposed roads within the project area, though initially somewhat permeable and porous, will be compacted by heavy machinery traffic. If water cannot percolate through the juniper material, the proposed roads would potentially divert surface flow paths. Proposed PDFs would mitigate this impact. Compaction of the underlying ground surface may occur. In addition, the road surfaces will preclude vegetation establishment. The effects on soils and vegetation will have a minor effect on runoff generation and erosion, provided that the roads are constructed along the contour.

Alternative 2:

The limited extent of juniper treatments in this alternative would not produce the beneficial impacts on the hydrologic cycle as described for Alternative 1. There would be no appreciable reduction in runoff rates from soils that are depleted in organic matter.

Mowing of shrubs and grasses could cause increases in soil erosion and runoff especially in areas with steep slopes and soils with high erosion potential. The relatively small width of these areas will ensure that the slope length of

disturbed areas is short, thus reducing erosion potential. Burning of piles may cause highly localized damage to soils, though regeneration of native shrubs and grasses should mitigate this effect.

Alternative 3:

This alternative would not address the effect of juniper encroachment on hydrologic processes or the risk of catastrophic disturbance associated with wildfire. There would be no appreciable reduction in runoff rates from soils that are depleted in organic matter. Were they to occur, large wildfires would likely have a greater and longer lasting impact on hydrologic processes than would Alternatives 1 or 2 (DeBano et al., 1996).

Wildlife

Alternative 1:

Under the proposed alternative the removal of juniper in shrub steppe habitat would assist in the recovery of the shrub community, which translates into increased forage for mule deer. Mule deer inhabit the proposed area during the winter months. The potential for disturbance from activities associated with the proposed action would be minimized by the seasonal restrictions (see PDF's). The loss of juniper trees may reduce hiding and thermal cover temporarily until the shrub community has a chance to recover, but the old growth trees and designated wildlife leave trees along with the untreated areas would provide both adequate thermal and hiding cover.

The removal of juniper would also assist in the restoration of form and function to the shrub communities which serves as habitat for many sagebrush obligate species. Surveys conducted in 2000 and 2001 on Harpold Ridge (ridge adjacent to the proposed project area and similar habitat conditions) did not detect any of the sage/grassland (Brewer's sparrow, vesper sparrow, sage thrasher) and shrubland species (green-tailed towhee and lark sparrow) that would be expected. These are all considered species of concern by the BLM. This restoration project would help restore the shrub habitat needed by these species.

The loss of juniper could have a detrimental affect on other species such as the ash throated flycatcher, chipping sparrow, juniper titmouse, mountain chickadee, Townsend's solitaire, and great horned owl. These species are generally associated with juniper woodland habitat. Due to the abundance of juniper woodlands in adjacent to the proposed area, sufficient habitat still occurs to support these species. Reduction of great horned owls (a predator on nest sites) should be beneficial to both the Swainson's and red-tailed hawk.

There is potential for individual trees with raptor nests to be cut. Project design features leaving all "old growth" trees and all nest structures would reduce the risk of losing individual nest sites. The retention of old growth trees would leave adequate nesting opportunities for the American kestrel and all other cavity nesters, as well as, retaining suitable roosting habitat for all bat species that may reside within the project area.

Alternative 2:

The proposed area is considered critical winter range for mule deer, which translates into their reliance on this area during those months. This alternative would do little to aid in the restoration of the shrub steppe community outside the Wildland Urban Interface. If the majority of the area is left untreated, the encroaching juniper will continue to progress into a juniper woodland, out-competing the shrub and the herbaceous vegetation. This would allow continued reduction of forage for mule deer. This alternative would also continue to reduce habitat used by other sage obligate species. The invasion of western juniper would continue to progress into woodland, excluding much of the shrubs, herbaceous vegetation, and vegetative structure needed by songbirds, raptors, and other shrub steppe species.

Species associated with juniper woodlands would likely benefit from Alternative 2. Under this alternative, western juniper will continue to move towards a climax juniper woodland.

Alternative 3:

This alternative would be detrimental to mule deer and all shrub steppe obligate species. If left untreated, western juniper would progress to a woodland, reducing both shrubs and herbaceous vegetation. This would translate into the reduction of forage availability for mule deer and loss of habitat for other shrub steppe obligate species.

Species associated with juniper woodlands would likely benefit from Alternative 3. Under this alternative, western juniper will continue to move towards a climax juniper woodland.

Cultural Resources

All cultural resources older than 50 years must be evaluated for eligibility to the National Register as part of the Section 106 process established by the National Historic Preservation Act of 1966, as amended in 1992 (NHPA), and reinforced by 36 CFR Part 800. Half of the proposed project area was surveyed and inventoried under contract with Native-X Archaeological Services in 2000 as part of a wildlife enhancement/juniper thinning project. Survey design followed a BLM Class III prescription and cultural resources were identified.

Before ground-disturbing activities, sites will be relocated and demarcated in the field with flagging. The protection measure employed will be to avoid the sites during project activities. It is anticipated that with this protection, the proposed actions in Alternatives 1 and 2 would have no effect upon known cultural resources.

Areas not surveyed in 2000 will be surveyed prior to any ground disturbing activity. Although the area will be completely surveyed before ground disturbing activity, the potential exists for project activities to impact subsurface cultural materials. BLM Class III surveys do not incorporate sub-surface methods, thus sites may have been missed due to heavy organic ground cover. If cultural resources are encountered during proposed project activities, then all work would stop and the lead area archaeologist would be notified. Upon notification, the archaeologist would conduct an investigation to mitigate the situation.

Should adjacent private and/or state lands later be included within the proposed projects, cultural resource inventory would also need to be performed on those lands prior to treatments.

Although the Klamath Tribes currently have no federally recognized “treaty rights” on BLM lands within the project area, they remain concerned about land use decisions made by BLM that may have potential impacts to cultural resources. Coordination efforts have and continue to keep the Klamath Tribes informed of BLM actions.

Soils

Alternative 1:

The portion of this alternative, which includes mechanical harvesting, has an associated risk of soil compaction, soil erosion, and loss of site productivity, especially if cut juniper is gathered and removed. The same can be said for the risk of soil displacement. Proposed PDF's would assist in minimizing these impacts.

Soil compaction occurs when soil macropore is reduced, resulting in an increase in soil bulk density. These macropores are critical to soil health as they are where soil organisms reside; fine roots of plants reside, and are the means by which water infiltration into soil occurs. Soil compaction and the associated compromise of macropores is a risk associated with mechanized ground based harvest.

The Lorella very stony loam, which makes up the majority of the project area, has moderate frost heaving potential and moderate to high shrink-swell potential due to a higher clay content. These soil attributes, may over a period of time reduce the effects of compaction in the upper soil layers. It is unknown how long these processes would take to ameliorate compaction that may occur during this treatment.

Soil monitoring on Klamath Falls Resource Area (KFRA) to date has been conducted in timber harvest operations in upland communities. The results of this monitoring (KFRA Soil Monitoring, 1997 and KFRA Soil Monitoring, 1999) have concluded that detrimental soil compaction (>15% increase in bulk density, as defined in KFRA Resource Management Plan (Bureau of Land Management, September 1994) and Standards and Guidelines for Detrimental Soils, Pacific Northwest Region (Meurisse, 1997) may occur with as few as three passes of a mechanical harvester over the same ground. Detrimental soil compaction is further defined when it occurs on greater than or equal to 20% of the project area.

KFRA is currently conducting soil compaction monitoring on Short Lake Fuel Reduction Treatment which is using a similar combination of methods, including ground based mechanical harvesters, to reduce fuels and restore wildlife habitat. The bulk of the Short Lake project area has the Lorella very stony loam 2 to 35% south slopes, as does this project. The pre-treatment soil sampling was completed in 2001. Effects of the treatment will not be known until after post treatment samples are taken and analyzed which will occur after the project is completed, sometime

within next few years. Findings of this monitoring will be used to modify, if necessary, future treatments to reduce potential soil impacts in the project area.

Use of slashbuster machinery has the same risk of soil disturbance or compaction as ground-based mechanical harvesters. In 2001 KFRA initiated soil compaction monitoring of a slashbuster project on Hamaker Mountain. The pre-treatment soil sampling was completed in 2001. Effects of the treatment will not be known until after post treatment samples are taken and analyzed which will occur after the project is completed sometime within next few years. There is an additional risk to soils in areas that receive both mechanical harvester and slashbuster treatments, increasing the potential for detrimental compaction.

The juniper material used to develop proposed roads within the project area may cause compaction of the underlying ground surface. In addition, the road surfaces will preclude vegetation establishment. The effects on soils and vegetation will have a minor effect on runoff generation and erosion, provided that the roads are constructed along the contour (see PDF's).

Hand-felling and piling of juniper presents no risk to soil resources.

Alternative 2:

The potential risk of impacts to soil resources from this alternative are the same as in Alternative 1, except that the amount of land area affected would be smaller.

Alternative 3:

This alternative does not pose any immediate risk, however this action may pose a long term risk if the existing native shrub/grass communities are lost to western juniper invasion. The loss of existing native shrub/grass communities will reduce soil stability by increasing the amount of bare ground. This will result in an increased soil erosion hazard and a decrease in site productivity for both wildlife and livestock.

Project Design Features (PDF's) and Mitigating Measures

Project Design Features/Mitigating Measures Applicable to All Action Alternatives (1-2)

Wildlife/Vegetation

- All juniper considered "old growth" would be retained. Old growth is generally defined as any tree over the age of 150 years old and these trees are typically distinct in appearance. Their canopy becomes increasingly non-symmetrical in appearance with rounded-top canopies, canopies that contain dead limbs or spike tops, largely irregular tapering trunks, and deeply furrowed and fibrous bark. Younger trees (< 150 years) are more conical shaped and the bark is more typically scaly rather than furrowed (Miller et al 1999).
- The rangeland permittees will be requested to rest the allotment for at least one year and preferably two years after treatment in areas where greater than 35% of the allotment was treated. The KFRA range specialist will coordinate this action with the rangeland permittees.
- The contractor will be required to rinse machinery used in mechanical methods prior to moving onto the project area and prior to leaving an area with noxious weeds present, to prevent the potential spread of noxious weeds and other non-native species.
- Some selected younger (< 150 years) juniper trees may be retained as wildlife habitat.
- The proposed project area is classified as critical winter range for mule deer. No activities (including juniper cutting, piling, or burning; and vegetative planting or seeding specific to the alternative) will occur between November 15 and April 15 (unless approved by a KFRA wildlife biologist).
- Cut juniper may be utilized (fence posts, firewood, lumber, biomass, etc.), if economically and logistically feasible.

Prescribed Fire

- Pile burning, prescribed fire, and smoke management will be subject to KFRA Programmatic EA#O14-94-9 addressing the use of prescribed fire.
- Adjacent landowners and residents will be notified at least 30 days prior to burning.

Resources

- The proposed project area will be reviewed and necessary surveys conducted for cultural, botanical, and biological clearances, prior to any ground disturbing activity being implemented.

- Special status plants requiring protection will be buffered according to guidance provided by the resource area's botanist, and the area within these buffers will not be treated.
- Cultural sites requiring protection will be buffered according to guidance provided by the resource area's archaeologist, and the area within these buffers will not be treated.
- If any cultural sites are located during project implementation, activities will be temporarily suspended until appropriate mitigating measures are developed and the resource area archaeologist has provided clearance to proceed.

Soils

- The use of mechanical harvesters will be restricted to dry conditions to minimize soil compaction and soil disturbance, per the Klamath Falls Resource Area (KFRA) RMP/FEIS, Appendix F, pp. 23-24.
- Best Management Practices guidelines identified in the KFRA RMP/FEIS, Appendix F, on the use of a mechanical shear will be followed.
- In the event that felled juniper is commercially utilized, ground-based yarding would not occur on slopes greater than 35% (KFRA RMP/EIS page F-24).

Water Resources

- In the event that felled juniper is commercially utilized, skid trails will be designated and would only cross drainages at designated crossings. If deemed necessary, the crossings will be armored with suitable material (e.g., rocks or juniper boles) and/or rehabilitated following the completion of yarding activities (KFRA RMP/EIS page F-22).
- If used, skid trails and landings will be rehabilitated according to BMPs (KFRA RMP/EIS, pages F23 - F25) following the completion of yarding activity. Specifically, waterbars will be constructed across skid trails to minimize diversion of hydrologic flow paths, and berms or logs will be placed to ensure that skid trails are not open for off highway vehicle use.
- Where possible, treatment units within the proposed area will be designed to reduce the visual effects by feathering edges, creating uneven borders, and leaving selected juniper. Management activities should not dominate the view of the casual observer.
- Ephemeral/intermittent drainages may need a buffer on both sides in which only selected vegetation would be cut. The resource area riparian team would determine the size of buffer and treatment within.
- If juniper immediately adjacent to stream channels is designated for removal, hand-felling will be utilized if there is a risk to streambank stability. Mechanical treatments could occur adjacent to streams with stable banks.
- If it is found that juniper encroachment is affecting the development of riparian plant communities in the vicinity of the spring in T.39S R.11½E, section 15, thinning activities may take place there. Such treatments will rely on hand-felling, rather than mechanical harvesting, and yarding access may be limited or prohibited if site conditions suggest that resource damage could occur. If yarding is not feasible, felled trees may be hand-piled and burned.
- The road that traverses T. 39S, R. 11½ E, section 24 from the SE to the NW is contributing runoff and sediment to the adjacent ephemeral stream channel. If this road is used under the proposed action, portions of it should have waterbars or other appropriate drainage features installed upon completion of the project.

Roads

- If applicable, roads would be designed from juniper chips to minimize impacts to soils and reduce the longevity of the roads existence. Juniper trees within the project area would be chipped and used as the roads base materials.
- Install water gaps in chip roads at intervals equal to the waterbar spacing lengths described in the KFRMP/EIS (page D-25). Water gaps will be constructed by removing the road base for approximately 10 feet, thereby removing the constructed berm that would otherwise divert flow paths for long distances.
- Obliterate the chip roads where it intersects existing traditionally-surfaced roads. This will help prevent the juniper roads from becoming integrated into the transportation network during the 10 to 15 years it will take for the road surface to decay.
- Chip roads will not be built where their construction would require excavation of cut slopes or construction of fill slopes.

Other Consequences

For all alternatives, no direct or indirect disproportionately high or adverse human health or environmental effects to minority or low income populations are expected to result from implementation of the proposed action or the alternatives.

The following resources are not present or would not be impacted by any of the alternatives: prime and unique farmlands, mining claims, flood plains, paleontological resources, wilderness, roadless areas, research natural areas, special areas (Areas of Critical Environmental Concern), wild and scenic rivers, wild horses/burros, or hazardous materials.

Consultations

No Threatened and Endangered species are present within the proposed project area. There is a slight potential for some sedimentation to enter the Lost River, habitat for the Lost River and short-nosed sucker. This potential is very remote and the impacts would be immeasurable due to the small percentage of water flow that enters the river. Therefore, the BLM has determined that the proposed actions would be considered a "No Effect" on all Threatened and Endangered species and consequently there is no need to consult with U.S. Fish and Wildlife Service on the proposed actions.

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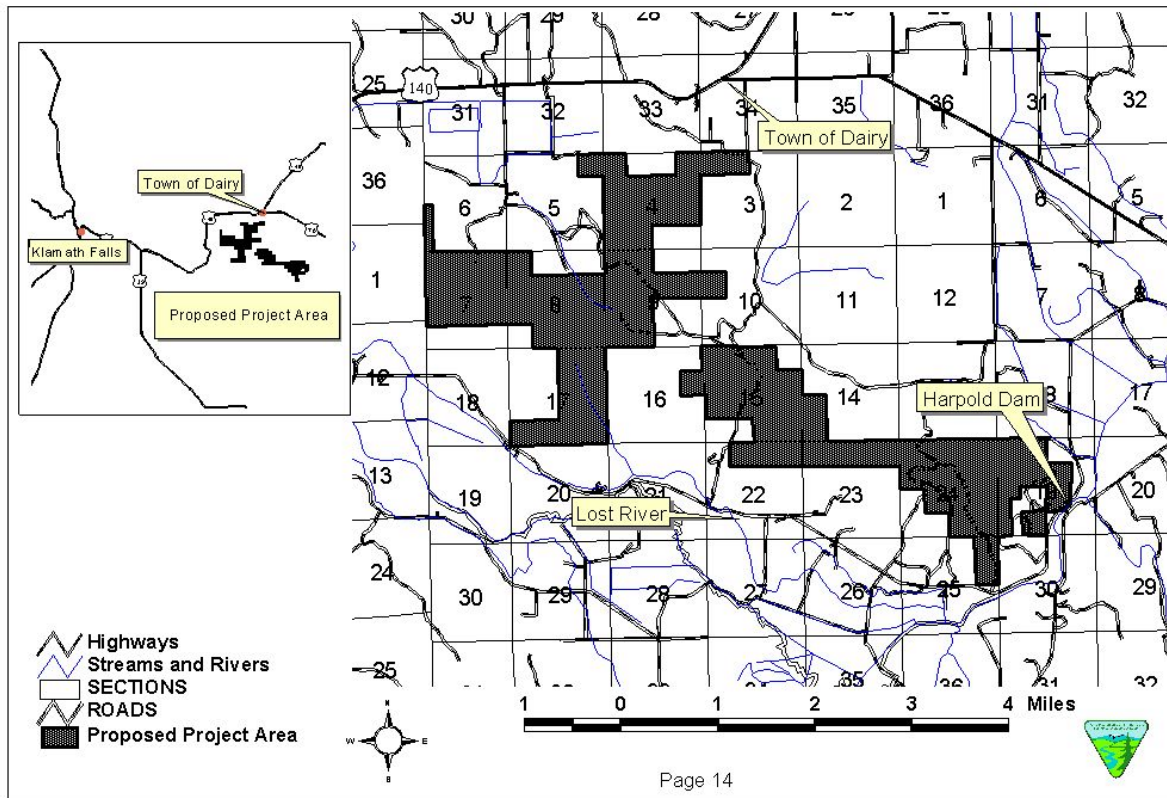
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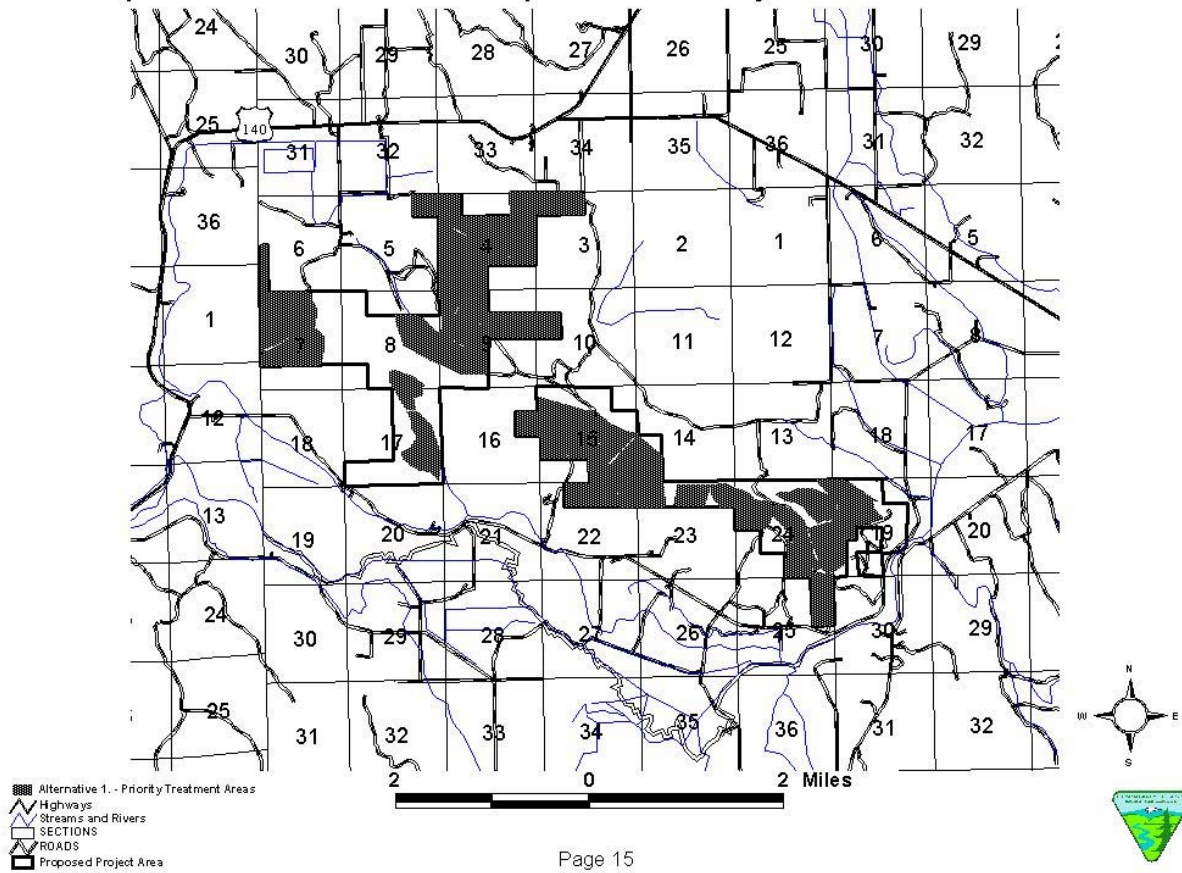
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Map 1. Horton Rim and Windy Ridge Proposed Project Area



Map 2. Alternative 1- Proposed Priority Treatment Areas



Map 3. Alternative 2- Proposed Priority Treatment Areas

